Amendment to the Claims:

1. (Currently Amended) A method for use of a computer-assisted surgery system during a medical procedure, comprising:

receiving information on an object of interest;

tracking a position of a manually ~~manipulatable~~ manipulated tool mechanically coupled to a haptic device as a surgeon manually holds and manipulates the tool;

determining a scalar distance between a current position of said tool and said object of interest; and

providing an indication of said scalar distance to a user of said tool,

wherein the object of interest includes at least one haptic virtual object that represents a virtual cutting boundary for the tool and that is defined at least in part by:

a mapping between a pose of the tool and an output wrench of the haptic device, and,

wherein providing the indication of the scalar distance includes activating at least one actuator of the haptic device to generate the output wrench when the tool intrudes on the virtual cutting boundary.

2. (Currently Amended) A method for use of a computer-assisted surgery system during a surgical procedure, the method comprising:

displaying information about an anatomical target region of a patient including an anatomical object on which the surgical procedure is to be performed to remove tissue by cutting with a surgical cutting tool;

defining a virtual cutting boundary with sharp edges for the surgical cutting tool relative to the anatomical object, ~~which~~ the anatomical object [[has]] having a sufficiently high curvature that the surgical cutting tool tends to slip off the sharp edges of the virtual cutting boundary during cutting, the virtual cutting boundary being defined at least in part by a mapping between a pose of the surgical cutting tool and an output wrench of a haptic device to which the surgical cutting tool is attached;

tracking a position of the surgical cutting tool as the surgical cutting tool is manually moved by a user in performing the surgical procedure;

displaying an anatomical image of anatomy of the patient including a representation of the surgical cutting tool as the surgical cutting tool moves during the surgical procedure;

determining a distance between a current position of said surgical cutting tool and the virtual cutting boundary;

providing to the user of the surgical cutting tool an indication of said distance; and

activating at least one actuator of the haptic device to generate the output wrench based on the tracked position of the surgical cutting tool and the mapping such that the surgical cutting tool ~~maintains~~ is constrained to maintain the sharp edges of the virtual cutting boundary as the surgical cutting tool removes tissue from the anatomical object, and

wherein pose connotes position, orientation, velocity, and/or acceleration, and

wherein wrench connotes forces and/or torques.

3. (Original) The method of claim 2, further comprising, prior to said providing step, selecting a type of visual indication to provide to said user.

4. (Previously Presented) The method of claim 2, wherein said indication is provided by a visual indicator selected from the group consisting of a level meter, a dial, a numerical display, and a graph.

5. (Currently Amended) The method of claim 2, wherein defining the cutting boundary includes defining a surface of bone to be left after bone removal with the surgical tool and said providing step comprises providing a visual indication of said distance on a display device associated with the computer-assisted surgery system, such that the distance is indicative of an amount of bone still to be removed.

6. (Currently Amended) The method of claim 2, wherein said providing step comprises providing a visual indication of said distance on a display device disposed on the haptic device associated with said computer-assisted surgery system, the visual indication of said distance being different from the displayed anatomical image.

7. (Previously Presented) The method of claim 2, wherein said providing step comprises providing a visual indication of said distance on a display device disposed on the surgical cutting tool in proximity to the anatomical target region of the patient.

8. (Previously Presented) The method of claim 3, further comprising selecting a color for said visual indication based at least in part on the distance.

9. (Previously Presented) The method of claim 3, further comprising, prior to said providing step, selecting said visual indication based at least in part on said distance.

10. (Currently Amended) The method of claim 1, wherein the haptic virtual object includes a definition of a ~~desired~~ target shape for ~~an anatomy~~ a surface of an anatomical structure of a patient and the scalar distance represents the current distance between the tool and the target shape.

11. (Cancelled)

12. (Previously Presented) The method of claim 1, wherein said haptic virtual object includes a definition of a curve, a point, a surface, a volume, and a set of desired positions.

13. (Currently Amended) The method of claim 2, wherein said providing step further includes providing ~~a predetermined visual indication indicating that said distance is within at least one of an acceptable range and an unacceptable range~~ at least one of a numerical display and a graphic display depicting the distance.

14. (Cancelled)

15. (Previously Presented) A method for use of a computer-assisted medical system during a medical procedure, comprising:

receiving information on an object of interest;

tracking a position of a tool which is physically manipulatable by a user and is coupled to a haptic device;

determining a scalar distance between a current position of said tool and said object of interest;

wherein the object of interest includes at least one virtual haptic object that represents a virtual cutting boundary for the tool, the virtual haptic object being defined at least in part by

a mapping between a pose of the tool and an output wrench of the haptic device; and

providing to the user of the tool tactile feedback indicative of said scalar distance between the current position of the tool and the virtual cutting boundary, wherein providing the tactile feedback includes generating the output wrench via the haptic device.

16. (Original) The method of claim 1, wherein said providing step further comprises causing vibration of a device that is in contact with said user.

17. (Original) The method of claim 1, further comprising selecting a type of indication based at least in part on said scalar distance.

18. (Currently Amended) The method of claim 1, wherein said cutting tool is a bone removal tool, the virtual cutting boundary defines a curved bone surface that is to receive a surgical implant, and the providing step comprises indicating [[that]] said scalar distance ~~is within at least one of an acceptable range and an unacceptable range~~ during the bone removal such that during the bone removal, the scalar distance indicates a thickness of bone to be removed.

19. (Previously Presented) The method of claim 15, wherein said virtual haptic object includes an edge between two portions joined by the edge and an angle between the two portions is less than 180 degrees, and further including:

based on the scalar distance, extending a portion of the virtual haptic object beyond the edge to define a extended cutting surface.

20. (Cancelled)

21. (Currently Amended) A method for use of a computer-assisted surgery system during a medical procedure, comprising:

receiving and displaying information on an object of interest that includes a virtual guide surface;

tracking a current position of a tool mechanically coupled to a haptic device as the tool moves relative to the virtual guide surface,

displaying the current position of the tool relative to the virtual guide surface;

determining a current scalar distance between the current position of said tool and said virtual guide surface;

providing an audio signal which changes [[as]] in accordance with the current scalar distance changes to provide an audio indication of said current scalar distance to a user of said tool;

providing force feedback to the user via the haptic device which at least one of:

attracts the tool toward the virtual guide surface,

repels the tool from the virtual guide surface, and

regulates a speed of moving the tool relative to the virtual guide surface.

22. (Previously Presented) The method of claim 21, wherein the virtual guide surface includes a plurality of portions and further comprising:

extending at least one of the plurality of portions of the virtual guide surface based on a current scalar distance between the current position of the tool and the at least one of the plurality of portions of the virtual guide surface.

23. (Previously Presented) The method of claim 21, wherein said audio signal providing step comprises providing said audio indication of said current scalar distance via an audio device associated with a computer-assisted surgery system.

24. (Previously Presented) The method of claim 21, wherein said providing step comprises providing said audio indication of said current scalar distance via an audio device disposed on the haptic device associated with a computer-assisted surgery system.

25. (Previously Presented) The method of claim 21, wherein the audio signal changes proportionately to changes in said current scalar distance.

26. (Previously Presented) The method of claim 21, further comprising, prior to said providing step, selecting said audio indication based at least in part on said current scalar distance.

27. (Currently Amended) The method of claim 21, wherein said virtual guide surface defines a desired shape for ~~an anatomy~~ sculpting a bone of a patient.

28-29. (Cancelled)

30. (Currently Amended) The method of claim 21, wherein said providing step further includes ~~providing a predetermined audio indication indicating that said current scalar distance is at least one of within an acceptable range and an unacceptable range~~ generating at least one of a numerical display and a graphical display indicating the current scalar distance.

31. (Cancelled)

32. (Previously Presented) A computer-assisted surgery system for use during a medical procedure, comprising:

a processor programmed with application logic operatively associated with said computer-assisted surgery system and operable to:

receive information on an object of interest associated with an internal anatomy of a patient on whom the procedure is performed, the object of interest including a virtual cutting boundary for guiding a surgical tool coupled to a haptic device;

track the position of the surgical tool as the surgical tool moves relative to the object of interest at least in part through the internal anatomy of the patient during the medical procedure;

determine a current scalar distance between a current position of said surgical tool and said object of interest; and

control at least one actuator of the haptic device to generate at least one of an output force and torque which varies with said current scalar distance to provide an indication of said current scalar distance to a user of said surgical tool which indication changes

during the medical procedure as the surgical tool moves through the internal anatomy of the patient; and

a display which displays a representation of at least a portion of the internal anatomy, the object of interest, and the surgical tool.

33. (Currently Amended) The system of claim 32, wherein said application logic is further operable to provide a visual indication of said current scalar distance ~~to said user of said tool~~ in addition to the displayed representation of the portion of the internal anatomy, the object of interest, and the surgical tool.

34. (Original) The system of claim 33, wherein said application logic is further operable to select a type of visual indication to provide to said user.

35. (Original) The system of claim 33, wherein said visual indication is provided by a visual indicator selected from the group consisting of a level meter, a dial, a numerical display, and a graph.

36. (Previously Presented) The system of claim 33, wherein said application logic is further operable to provide said visual indication of said current scalar distance on a display device associated with at least one of said computer-assisted surgery system and said haptic device.

37. (Previously Presented) The system of claim 33, wherein the object of interest defines edges of a region of an end of a limb bone to be sculpted to match an implant to be received.

38. (Currently Amended) A computer-assisted surgery system for use during a surgical procedure, comprising:

a handheld surgical tool coupled to a haptic device for performing the surgical procedure on an anatomy of a patient to remove tissue, the haptic device including at least one actuator which is activated to generate an output wrench, and the computer-assisted surgery system including a display device;

a tracking system which tracks movement of the surgical tool during the surgical procedure; and

application logic operatively associated with said computer-assisted surgery system and operable to:

receive information about an object of interest associated with the anatomy of the patient, the object of interest including at least one haptic object that represents a virtual cutting boundary for the surgical tool;

receive surgical tool position information from the tracking system;

determine a scalar distance between a current position of said surgical tool and said object of interest; and

provide an anatomical display indicative of patient anatomy and a current position of the surgical tool,

provide ~~an indication of~~ a human-readable scalar distance display indicating said scalar distance on the display device, the scalar distance display being at least one of numerical and graphical;

actuate the at least one actuator of the haptic device to generate the output wrench in accordance with said scalar distance;

wherein the at least one haptic object is defined by a mapping between a pose of the surgical tool and the output wrench of the haptic device.

39. (Previously Presented) The system of claim 34, wherein said application logic is further operable to select a color for said visual indication based at least in part on said current scalar distance.

40. (Previously Presented) The system of claim 33, wherein said application logic is further operable to select a plurality of visual indications based at least in part on said current scalar distance.

41. (Cancelled)

42. (Previously Presented) The system of claim 32, wherein said object of interest defines a desired shape of a portion of a bone of the patient which is to be sculpted by the surgical tool during the medical procedure to receive a surgical implant.

43. (Currently Amended) The system of ~~claim 33~~ claim 38, wherein said object of interest ~~includes at least one of a defined curve, point, surface, volume, and set of desired positions~~ defines a desired shape of a surface of a bone portion to be sculpted by the surgical tool to receive a surgical implant.

5

44-45. (Cancelled)

46. (Previously Presented) The system of claim 32, wherein said application logic is further operable to provide a tactile indication of said current scalar distance to said user of said surgical tool.

47. (Original) The system of claim 32, wherein said application logic is further operable to cause vibration of a device in contact with said user.

48. (Previously Presented) The system of claim 32, wherein said application logic is further operable to select a type of indication based at least in part on said current scalar distance.

49. (Previously Presented) The system of claim 32, wherein said application logic is further operable to provide said indication indicating that said current scalar distance is within at least one of an acceptable range and an unacceptable range.

50-51. (Cancelled)

52. (Currently Amended) A computer-assisted surgery system for use during a medical procedure, comprising:

application logic operatively associated with said computer-assisted surgery system and operable to:

receive information on an object of interest, the object of interest including at least one virtual cutting boundary for a movable medical tool which is defined at least in part by a mapping between a pose of the medical tool and an output wrench of a haptic device;

track position changes of [[a]] the moveable medical tool of [[a]] the haptic device, wherein the medical tool is coupled to the haptic device allowing a user to grasp and physically interact with the medical tool;

determine a current scalar distance between a current position of said medical tool and said ~~object of interest~~ virtual cutting boundary as the medical tool moves relative to the object of interest during the medical procedure; and

provide an indication of said current scalar distance to said user of said medical tool,

~~wherein the object of interest includes at least one virtual cutting boundary for the medical tool which is defined at least in part by a mapping between a pose of the medical tool and an output wrench of the haptic device,~~ and

wherein providing the indication of the current scalar distance includes actuating at least one actuator of the haptic device to generate the output wrench when the medical tool intrudes on the virtual cutting boundary.

53. (Previously Presented) The system of claim 52, wherein said application logic is further operable to provide an audio indication of said current scalar distance to said user.

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54. (Previously Presented) The system of claim 53, wherein said application logic is further operable to provide said audio indication of said current scalar distance via an audio device associated with said computer-assisted surgery system.

55. (Previously Presented) The system of claim 53, wherein said application logic is further operable to provide said audio indication of said current scalar distance via an audio device disposed on the haptic device associated with said computer-assisted surgery system.

56. (Cancelled)

57. (Previously Presented) The system of claim 53, wherein said application logic is further operable to select said audio indication based at least in part on said current scalar distance.

58. (Previously Presented) The system of claim 52, wherein the object of interest includes a definition of a desired shape for a region of a bone to be sculpted to receive a surgical implant.

59-60. (Cancelled)

61. (Previously Presented) The system of claim 52, wherein said application logic is further operable to provide a predetermined audio indication indicating that said current scalar distance is within at least one of an acceptable range and an unacceptable range.

62. (Previously Presented) The system of claim 52, wherein said application logic is further operable to extend a portion of the virtual cutting boundary based on the determined current scalar distance.

63. (Original) The system of claim 52, wherein said application logic comprises computer executable software code.

64. (Previously Presented) The system of claim 32, wherein the surgical tool removes bone material and the virtual cutting boundary includes a definition of a surface of bone to be left after a bone material removal procedure.

65. (Cancelled)

66. (Currently Amended) A tangible computer readable medium programmed with instructions which when executed by a programmable device cause the programmable device to execute the steps of:

receiving information on an object of interest, the object of interest including at least one virtual haptic object that represents a virtual cutting boundary for a surgical tool and that is defined by a mapping between a pose of the surgical tool and an output wrench of a haptic device;

determining a current position of [[a]] the surgical tool which is coupled to [[a]] the haptic device used in performing a surgical procedure;

determining a scalar distance between the current position of said surgical tool and said object of interest; and

providing a changing indication of said scalar distance to a user of said surgical tool as the surgical tool removes tissue during the surgical procedure,

~~wherein the object of interest includes at least one virtual haptic object that represents a virtual cutting boundary for the surgical tool and that is defined by a mapping between a pose of the surgical tool and an output wrench of the haptic device,~~ and

wherein the programmable device further executes the steps of actuating at least one actuator of the haptic device in accordance with the scalar distance to generate the output wrench based on the determined scalar distance and the mapping.

67. (Currently Amended) The tangible computer readable medium of claim 66, wherein said indication is at least one of a visual indication, an audio indication, and a tactile indication.

68-69. (Cancelled)

70. (Currently Amended) The tangible computer readable medium of claim 66, further comprising instructions which when executed by said programmable device cause the programmable device to execute the step of selecting a type of indication based at least in part on said scalar distance.

71. (Currently Amended) The tangible computer readable medium of claim 66, further comprising instructions which when executed by said programmable device cause the programmable device to ~~execute the step of providing~~ display an anatomical image depicting anatomy of a patient with whom the object of interest is associated and a current position of the surgical tool and said indication indicating [[that]] said scalar distance ~~is within at least one of an acceptable range and an unacceptable range~~ includes a distance display in addition to the anatomical display.

72. (Currently Amended) The tangible computer readable medium of claim 66, wherein the virtual cutting boundary defines a portion of an end of a bone to be sculpted to receive an insert.

73. (Cancelled)

74. (Currently Amended) The tangible computer readable medium of claim 66, further comprising instructions which when executed by said programmable device cause the programmable device to execute the step of extending at least a portion of the virtual haptic object in accordance with the determined scalar distance.